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SUBJECTS	74577
COMPUTED	171517
COMPUTEDS	0
(9 AND (SUBJECT ADJ COMPUTED)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	0
(L9 AND (SUBJECT ADJ COMPUTED)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	0

Database: US Patents Full-Text Database; US Pre-Grant Publication Full-Text Database; JPO Abstracts Database; EPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

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Search Results -

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SUBJECT	896341
SUBJECTS	74577
COMPUTED	171517
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(9 AND (SUBJECT ADJ COMPUTED)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	0
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Database: US Patents Full-Text Database; US Pre-Grant Publication Full-Text Database; JPO Abstracts Database; EPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Search: L9 and

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DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ			
L10	L9 and (subject adj computed)	0	L10
L9	L5 and (human adj subject)	174	L9
L8	L4 and (human asj subject)	0	L8
L7	L5 and subject	275	L7
L6	L5 and (human asj subject)	0	L6
L5	L4 and imag$4	336	L5
L4	L3 and (computer adj program$4)	336	L4
L3	L2 and computer	970	L3
L2	L1 and Phantom	1576	L2
L1	(magnetic adj resonance)	59888	L1

END OF SEARCH HISTORY

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ			
L10	L9 and (subject adj computed)	0	L10
L9	L5 and (human adj subject)	174	L9
L8	L4 and (human asj subject)	0	L8
L7	L5 and subject	275	L7
L6	L5 and (human asj subject)	0	L6
L5	L4 and imag$4	336	L5
L4	L3 and (computer adj program$4)	336	L4
L3	L2 and computer	970	L3
L2	L1 and Phantom	1576	L2
L1	(magnetic adj resonance)	59888	L1

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☐ 1. Document ID: US 6334846 B1 Relevance Rank: 54

L2: Entry 2 of 15 File: USPT Jan 1, 2002

US-PAT-NO: 6334846
DOCUMENT-IDENTIFIER: US 6334846 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: January 1, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335916
DATE FILED: June 18, 1999

PARENT-CASE:
This application is a Continuation-in-part of application Ser. No. 08/624,104 filed Mar. 29, 1996, now U.S. Pat. No. 5,984,881, issued Nov. 16, 1990.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995
JP	8-070206	March 26, 1996

INT-CL: [07] A61 B 5/055, A61 B 8/00

US-CL-ISSUED: 600/439; 600/412
US-CL-CURRENT: 600/439; 600/412

FIELD-OF-SEARCH: 601/2, 601/3, 600/411, 600/439, 600/412

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4617931	October 1986	Dory	
4620546	November 1986	Aida et al.	
4658828	April 1987	Dory	
4942878	July 1990	Dory	
4986275	January 1991	Ishida et al.	
RE33590	May 1991	Dory	
5076277	December 1991	Iwama et al.	128/660.03
5080101	January 1992	Dory	
5080102	January 1992	Dory	
5111822	May 1992	Dory	
5143073	September 1992	Dory	
5150712	September 1992	Dory	
5247935	September 1993	Cline et al.	
5291890	March 1994	Cline et al.	
5391140	February 1995	Shaetzke et al.	601/4
5431621	July 1995	Dory	601/2
5435311	July 1995	Umemura et al.	128/660.03
5558092	September 1996	Unger et al.	128/660.03
5722411	March 1998	Suzuki et al.	
5984881	November 1999	Ishibashi et al.	
6083166	July 2000	Holdaway et al.	
6086535	July 2000	Ishibashi et al.	
6093148	July 2000	Fujimoto	
6188923	February 2001	Bechtold	600/427
6194899	February 2001	Ishihara et al.	324/315

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370841	March 1990	EP	
0 370 841	May 1990	EP	
0 627 206	December 1994	EP	
6 59289	August 1994	JP	

ART-UNIT: 3737

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is

adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

3 Claims, 67 Drawing figures

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Image

☐ 2. Document ID: US 5984881 A Relevance Rank: 53

L2: Entry 8 of 15 File: USPT Nov 16, 1999

US-PAT-NO: 5984881
DOCUMENT-IDENTIFIER: US 5984881 A

TITLE: Ultrasound therapeutic apparatus using a therapeutic ultrasonic wave source and an ultrasonic probe

DATE-ISSUED: November 16, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 08/ 624104
DATE FILED: March 29, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995

INT-CL: [06] A61 H 1/00

US-CL-ISSUED: 601/2
US-CL-CURRENT: 601/2

FIELD-OF-SEARCH: 601/2, 601/3, 601/4, 600/449, 600/459

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
Re33590	May 1991	Dory	
4617931	October 1986	Dory	
4620546	November 1986	Aida et al.	
4658828	April 1987	Dory	
4942878	July 1990	Dory	
4986275	January 1991	Ishida et al.	
5076277	December 1991	Iwama et al.	128/660.03
5080101	January 1992	Dory	
5080102	January 1992	Dory	
5111822	May 1992	Dory	
5143073	September 1992	Dory	
5150712	September 1992	Dory	
5391140	February 1995	Shaetzke et al.	601/4
5431621	July 1995	Dory	601/2
5435311	July 1995	Umemura et al.	128/660.03
5558092	September 1996	Unger et al	128/660.03

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370 841	March 1990	EP	
0 627 206	December 1994	EP	
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
6-59289	August 1994	JP	

ART-UNIT: 377

PRIMARY-EXAMINER: Manuel; George

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

6 Claims, 67 Drawing figures

☐ 3. Document ID: US 6086535 A Relevance Rank: 53

L2: Entry 6 of 15 File: USPT Jul 11, 2000

US-PAT-NO: 6086535
DOCUMENT-IDENTIFIER: US 6086535 A

TITLE: Ultrasound therapeutic apparataus

DATE-ISSUED: July 11, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335913
DATE FILED: June 18, 1999

PARENT-CASE:
This appln. is a DIV of Ser. No. 08/624,104 Mar. 29, 1996.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995
JP	8-070206	March 26, 1996

INT-CL: [07] A61 B 8/00, A61 N 7/00

US-CL-ISSUED: 600/439; 601/2
US-CL-CURRENT: 600/439; 601/2

FIELD-OF-SEARCH: 601/2, 601/3, 600/447, 600/439, 600/437, 600/459, 310/316, 310/317, 310/320, 73/579

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
Re33590	May 1991	Dory	
3828769	August 1974	Mettler	601/2
4617931	October 1986	Dory	
4620546	November 1986	Aida et al.	
4658828	April 1987	Dory	
4942878	July 1990	Dory	
4986275	January 1991	Ishida et al.	
5076277	December 1991	Iwama et al.	128/660.03
5080101	January 1992	Dory	
5080102	January 1992	Dory	
5111822	May 1992	Dory	
5143073	September 1992	Dory	
5150712	September 1992	Dory	
5391140	February 1995	Shaetzke et al.	601/4
5431621	July 1995	Dory	601/2
5435311	July 1995	Umemura et al.	128/660.03
5460595	October 1995	Hall et al.	601/2
5526815	June 1996	Granz et al.	600/439
5558092	September 1996	Unger et al.	128/660.03

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370 841	March 1990	EP	
0 627 206	December 1994	EP	
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
6-59289	August 1994	JP	

ART-UNIT: 377

PRIMARY-EXAMINER: Manuel; George

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

2 Claims, 67 Drawing figures

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw. Desc | Image

☐ 4. Document ID: US 6267734 B1 Relevance Rank: 53

L2: Entry 5 of 15 File: USPT Jul 31, 2001

US-PAT-NO: 6267734
DOCUMENT-IDENTIFIER: US 6267734 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: July 31, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335915
DATE FILED: June 18, 1999

PARENT-CASE:
This application is a division of 08/624,104 filed Mar. 29, 1996.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995

INT-CL: [07] A61 B 8/00

US-CL-ISSUED: 601/2; 600/439
US-CL-CURRENT: 601/2; 600/439

FIELD-OF-SEARCH: 601/2, 601/3, 600/439, 600/440, 600/441, 600/443

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
Re33590	May 1991	Dory	
4617931	October 1986	Dory	
4620546	November 1986	Aida et al.	
4658828	April 1987	Dory	
4942878	July 1990	Dory	
4986275	January 1991	Ishida et al.	
5076277	December 1991	Iwama et al.	128/660.03
5080101	January 1992	Dory	
5080102	January 1992	Dory	
5111822	May 1992	Dory	
5143073	September 1992	Dory	
5150712	September 1992	Dory	
5391140	February 1995	Shaetzke et al.	601/4
5431621	July 1995	Dory	601/2
5435311	July 1995	Umemura et al.	128/660.03
5553618	September 1996	Suzuki et al.	
5558092	September 1996	Unger et al.	128/660.03
5984881	November 1999	Ishibashi et al.	
6086535	July 2000	Ishibashi et al.	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370 841	March 1990	EP	
0 627 206	December 1994	EP	
6-59289	August 1994	JP	

ART-UNIT: 377

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J.

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

11 Claims, 67 Drawing figures

☐ 5. Document ID: US 6280402 B1 Relevance Rank: 53

L2: Entry 4 of 15 File: USPT Aug 28, 2001

US-PAT-NO: 6280402
DOCUMENT-IDENTIFIER: US 6280402 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: August 28, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335914
DATE FILED: June 18, 1999

PARENT-CASE:
This application is a Division of application Ser. No. 08/624,104 filed on Mar. 29, 1996 now U.S. Pat. No. 5,984,881.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7/097474	March 31, 1995
JP	7-203576	August 9, 1995

INT-CL: [07] A61 B 8/00

US-CL-ISSUED: 601/2; 600/439
US-CL-CURRENT: 601/2; 600/439

FIELD-OF-SEARCH: 601/2, 601/3, 600/439, 600/440, 600/441, 600/443

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
5553618	September 1996	Suzuki et al.	
5632277	May 1997	Chapman et al.	
5675554	October 1997	Cole et al.	
5706819	January 1998	Hwang et al.	
5827188	October 1998	Wright et al.	
5984881	November 1999	Ishibashi et al.	
6086535	July 2000	Ishibashi et al.	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
42 29 817	March 1994	DE	
0 627 206	December 1994	EP	

ART-UNIT: 377

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

2 Claims, 67 Drawing figures

☐ 6. Document ID: US 6454713 B1 Relevance Rank: 53

L2: Entry 1 of 15 File: USPT Sep 24, 2002

US-PAT-NO: 6454713
DOCUMENT-IDENTIFIER: US 6454713 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: September 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335521
DATE FILED: June 18, 1999

PARENT-CASE:
This application is a division of application Ser. No. 08/624,104 filed Mar. 29, 1996 now U.S. Pat. No. 5,984,881.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995
JP	8-070206	March 26, 1996

INT-CL: [07] A61 B 17/22

US-CL-ISSUED: 600/439
US-CL-CURRENT: 600/439

FIELD-OF-SEARCH: 601/4, 601/2, 601/3, 600/439, 600/407

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4617931	October 1986	Dory	
4620546	November 1986	Aida et al.	
4658828	April 1987	Dory	
4942878	July 1990	Dory	
4986275	January 1991	Ishida et al.	
RE33590	May 1991	Dory	
5076277	December 1991	Iwama et al.	128/660.03
5080101	January 1992	Dory	
5080102	January 1992	Dory	
5111822	May 1992	Dory	
5143073	September 1992	Dory	
5150712	September 1992	Dory	600/439
5358466	October 1994	Aida et al.	601/4
5381792	January 1995	Yanagida et al.	600/439
5391140	February 1995	Shaetzke et al.	601/4
5431621	July 1995	Dory	601/2
5435311	July 1995	Umemura et al.	128/660.03
5553618	September 1996	Suzuki et al.	600/407
5558092	September 1996	Unger et al.	128/660.03
5658239	August 1997	Delmenico	601/4

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370841	March 1990	EP	
0 627 206	December 1994	EP	
6 59289	August 1994	JP	

ART-UNIT: 3737

PRIMARY-EXAMINER: Casler; Brian L.

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

5 Claims, 68 Drawing figures

☐ 7. Document ID: US 5481190 A Relevance Rank: 44

L2: Entry 10 of 15 File: USPT Jan 2, 1996

US-PAT-NO: 5481190
DOCUMENT-IDENTIFIER: US 5481190 A

TITLE: MRI auto power control method and system

DATE-ISSUED: January 2, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sugiura; Satoshi	Ootawara			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 08/ 354473
DATE FILED: December 12, 1994

PARENT-CASE:
This is a continuation-in-part of application Ser. No. 07/914,797 filed on Jul. 16, 1992 now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	3-179850	July 19, 1991

INT-CL: [06] G01 V 3/00

US-CL-ISSUED: 324/314; 324/307
US-CL-CURRENT: 324/314; 324/307

FIELD-OF-SEARCH: 324/300, 324/307, 324/308, 324/309, 324/312, 324/314, 324/318, 324/322

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4675608	January 1987	Hanawa et al.	324/314
4739267	April 1988	Leroux et al.	324/314
4806867	February 1989	Hanawa et al.	324/314
4866386	September 1989	Sattin	324/314
4983921	January 1991	Kramer et al.	324/309

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0242286A1	October 1987	EP	
0391279A2	October 1990	EP	
0463789A2	January 1991	EP	
0414474A2	February 1991	EP	
0439119A2	July 1991	EP	

OTHER PUBLICATIONS

Operation Manual, V2.0 by Diasonics MT/S, Revision A, "Image Acquisition" (date unknown).
Operator Manual, Vol. 3, "Patient Preparation and the MR Exam" G. E. Oct. 1984.
Patent Application Serial No. 907,519 "Automatic Transmit and Receive Attenuation Prescaling in Nuclear Magnetic Resonance Scanner".

ART-UNIT: 225

PRIMARY-EXAMINER: Arana; Louis M.

ABSTRACT:

An MRI automatic power control system comprises a first unit for exciting each of a plurality of regions of a subject under examination with an excitation radio-frequency pulse of a different power, a second unit for acquiring magnetic resonance signals from the plurality of regions excited by the first unit, a third unit for identifying a maximum magnetic resonance signal contained in the magnetic resonance signals acquired by the second unit from the plurality of regions of the subject, and a fourth unit for storing the power of an excitation radio-frequency pulse that has provided the maximum magnetic resonance signal identified by the third unit as the optimum power of the excitation radio-frequency pulses.

12 Claims, 7 Drawing figures

☐ 8. Document ID: US 4689563 A Relevance Rank: 43

L2: Entry 13 of 15 File: USPT Aug 25, 1987

US-PAT-NO: 4689563
DOCUMENT-IDENTIFIER: US 4689563 A

TITLE: High-field nuclear magnetic resonance imaging/spectroscopy system

DATE-ISSUED: August 25, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bottomley; Paul A.	Clifton Park	NY		
Edelstein; William A.	Schenectady	NY		
Hart, Jr.; Howard R.	Schenectady	NY		
Schenck; John F.	Schenectady	NY		
Redington; Rowland W.	Schenectady	NY		
Leue; William M.	Albany	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743125
DATE FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309
US-CL-CURRENT: 324/309

FIELD-OF-SEARCH: 324/309

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4319190	March 1982	Brown	324/313 X
4443760	April 1984	Edelstein et al.	324/309
4472683	September 1984	Seikhara et al.	324/309
4553096	November 1985	Randell	324/309
4558279	December 1985	Ackerman et al.	324/315
4567440	January 1986	Haselgrove	324/309
4602641	July 1986	Feinberg	324/309 X
4617516	October 1986	Schenck	324/309 X
4618827	October 1986	Redington et al.	324/309
4621235	November 1986	Van Uijen et al.	324/309 X

OTHER PUBLICATIONS

"NMR: An Evolving Technology", brochure, General Electric Co. (1983), 8 pages.
"Radiology-69th Scientific Assembly & Annual Meeting, Chicago Nov. 13, 1983", brochure General Electric Co. (1983), 4 pages.
"SIGNA--The Signature of Excellence in MR Imaging", brochure, General Electric Co., Nov. 1983, pp. 1-10.
"Anatomy and Metabolism of the Normal Human Brain Studied by Magnetic Resonance at 1.5 Tesla", PA Bottomley et al., 150 Radiology 441-446 (Feb. 1984).
"Radiology--70th Scientific Assembly Annual Meeting, Washington, D.C., Nov. 25-30, 1984," brochure, General Electric Company, 1984; 7 pages.

ART-UNIT: 265

PRIMARY-EXAMINER: Noland; Tom

ABSTRACT:

A magnetic resonance system for both imaging and spectroscopy of a sample of non-magnetic material (such as a portion of the human anatomy and the like) at one static magnetic field magnitude in excess of 0.7 Tesla (T), utilizes a superconducting magnet having a room-temperature bore of diameter sufficiently large to place therein not only the desired sample but also a set of gradient magnetic field-producing coils and at least one radio-frequency coil for exciting and/or receiving response signals from the sample to be examined. The entire magnetic system has suitably-small temporal and positional field variations to allow imaging to be accomplished at the resonant frequencies of nuclei including .sup.1 H, .sup.13 C, .sup.19 F, .sup.23 Na and .sup.31 P. The system includes a novel interface subsystem, itself including a novel gradient signal switching circuit, for acquiring imaging data in relatively short time intervals.

15 Claims, 21 Drawing figures

☐ 9. Document ID: US 4689564 A Relevance Rank: 43

L2: Entry 12 of 15 File: USPT Aug 25, 1987

US-PAT-NO: 4689564
DOCUMENT-IDENTIFIER: US 4689564 A

TITLE: Digital interface subsystem for a magnetic resonance imaging and spectroscopy system

DATE-ISSUED: August 25, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Leue; William M.	Albany	NY		
Hodsoll, Jr.; Raymond J.	Galway	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743119
DATE FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309; 324/312, 324/313, 324/314
US-CL-CURRENT: 324/309; 324/312, 324/313, 324/314

FIELD-OF-SEARCH: 324/309, 324/312, 324/313, 324/314

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4115730	September 1978	Mansfield	324/312 X
4361807	November 1982	Burl et al.	324/309
4443760	April 1984	Edelstein et al.	324/314 X
4480228	October 1984	Bottomley	324/309
4573015	February 1986	Abe et al.	324/313 X
4585992	April 1986	Maudsley et al.	324/309
4585993	April 1986	Bottomley	324/309 X

ART-UNIT: 265

PRIMARY-EXAMINER: Noland; Tom

ABSTRACT:

A digital interface subsystem, for a magnetic resonance imaging and spectroscopy system, has an internal data bus interconnecting: a master sequencer, receiving instructions from a main system computer; a plurality of controlled generators for providing gradient-field, RF modulation and other required signal waveforms for proper excitation of a sample; and circuitry for analyzing the magnetic resonance response signals from the sample, responsive to the excitation signals for providing image information.

18 Claims, 14 Drawing figures

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

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☐ 10. Document ID: US 4680547 A Relevance Rank: 42

L2: Entry 14 of 15 File: USPT Jul 14, 1987

US-PAT-NO: 4680547
DOCUMENT-IDENTIFIER: US 4680547 A

TITLE: Gradient field switch for improved magnetic resonance imaging/spectroscopy system

DATE-ISSUED: July 14, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Leue; William M.	Albany	NY		
Hodsoll, Jr.; Raymond J.	Galway	NY		
Glover; Gary H.	Oconomowoc	WI		
Adamchick; John T.	Amsterdam	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743115
DATE-FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309
US-CL-CURRENT: 324/309

FIELD-OF-SEARCH: 324/309, 324/313, 324/318, 324/322, 128/653, 73/626

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4372323	February 1983	Takemura et al.	128/660
4510448	April 1985	Riedl	324/309

ART-UNIT: 265

PRIMARY-EXAMINER: Tokar; Michael J.

ABSTRACT:

A gradient field switch, for use in an improved nuclear magnetic resonance imaging and spectroscopy system, includes a control portion and a switching portion. The switching portion receives a plurality of magnetic field gradient signals and connects each signal to an associated one of at least the same plurality of outputs. The exact pattern of input-output interconnections is established by the control portion responsive to data received after the presence of a reset signal. By appropriate control data input, the gradient field signals can be routed to axes of a predetermined coordinate system, such that images of a sample can be obtained from several directions, responsive to command signals and without requiring physical movement of the sample being imaged.

13 Claims, 12 Drawing figures

☐ 11. Document ID: US 4694254 A Relevance Rank: 42

L2: Entry 11 of 15 File: USPT Sep 15, 1987

US-PAT-NO: 4694254
DOCUMENT-IDENTIFIER: US 4694254 A

TITLE: Radio-frequency spectrometer subsystem for a magnetic resonance imaging system

DATE-ISSUED: September 15, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Vatis; Dimitrios	Schenectady	NY		
Smith; Lowell S.	Schenectady	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743121
DATE FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309; 324/313, 324/314, 324/322
US-CL-CURRENT: 324/309; 324/313, 324/314, 324/322

FIELD-OF-SEARCH: 324/309, 324/307, 324/312, 324/313, 324/314, 324/318, 324/322

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4361807	November 1982	Burl et al.	324/309
4480228	October 1984	Bottomley	324/307 X
4506223	March 1985	Bottomley et al.	324/307 X
4516075	May 1985	Moran	324/309
4573015	February 1986	Abe et al.	324/313 X
4585992	April 1986	Maudsley et al.	324/312 X

ART-UNIT: 265

PRIMARY-EXAMINER: Noland; Tom

ABSTRACT:

A radio-frequency (RF) spectrometer subsystem, for a nuclear magnetic resonance spectroscopy and imaging system, provides high-power RF pulse signals each having an envelope of minimum distortion; a portion of the actual RF magnetic field, in the sample-examination volume, is returned to the spectrometer for subsequent correction of the RF signal characteristics responsive to a comparison of the RF magnetic field sample waveform to the requested pulse envelope waveform.

20 Claims, 23 Drawing figures

☐ 12. Document ID: US 5588032 A Relevance Rank: 40

L2: Entry 9 of 15 File: USPT Dec 24, 1996

US-PAT-NO: 5588032
DOCUMENT-IDENTIFIER: US 5588032 A

TITLE: Apparatus and method for imaging with wavefields using inverse scattering techniques

DATE-ISSUED: December 24, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Johnson; Steven A.	Salt Lake City	UT	84108	
Wiskin; James W.	Salt Lake City	UT	84112	
Borup; David T.	Salt Lake City	UT	84103	
Christensen; Douglas A.	Salt Lake City	UT	84121	
Stenger; Frank	Salt Lake City	UT	84103	

APPL-NO: 07/ 961768
DATE FILED: October 14, 1992

INT-CL: [06] G01 N 23/201, G01 V 1/00

US-CL-ISSUED: 378/8; 378/90, 378/98, 378/901, 364/413.13, 364/413.14, 364/421
US-CL-CURRENT: 378/8; 378/90, 378/901, 378/98, 702/1

FIELD-OF-SEARCH: 128/653.1, 128/664, 128/665, 128/660.02, 128/660.07, 364/413.13, 364/413.14, 364/421, 364/422, 378/86, 378/87, 378/90, 378/98, 378/901

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4662222	May 1987	Johnson	73/602
4727550	February 1988	Chang et al.	372/2
4798209	January 1989	Klingenbach et al.	128/653
5227797	July 1993	Murphy	342/22

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Robinson, B. S., and Greenleaf, J. F. (1990) "An Experimental Study of Diffraction Tomography under the Born Approximation," Acostical Imaging 18, No. 18, Jun.
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ART-UNIT: 256

PRIMARY-EXAMINER: Dzierzynski; Paul M.

ASSISTANT-EXAMINER: Bruce; David Vernon

ABSTRACT:

An apparatus and method for rapid real time imaging with wavefield energy by inverse scattering using a C.P.U programmed to process data derived from wavefield energy that has been transmitted and scattered by an object so as to reconstruct a wavefield image of the object. Electronic signals are propagated and are transduced into wavefield energy waves which in turn are propagated toward the object. Detector means detect the wavefield energy waves scattered by the object. The detected wavefield energy waves are then electronically processed and input into a high-speed digital computer which may comprise a C.P.U. and/or a C.P.U in combination with an array or parallel processor. Data is also prepared and input to the computer representing the incident field and the computer then reconstructs a high-quality image of the object having high spacial resolution and including actual internal viscous and elastic properties of the object through the use of new inverse scattering techniques used in the data processing steps. The media in which the object is embedded may be fluid or solid, homogeneous, or layered (such as stratigraphic layering, or ocean velocity layers, or layering of composites in nondestructive imaging applications), or may consist of porous material (either sedimentary deposits or composites in nondestructive testing).

120 Claims, 63 Drawing figures

☐ 13. Document ID: US 6005916 A Relevance Rank: 40

L2: Entry 7 of 15 File: USPT Dec 21, 1999

US-PAT-NO: 6005916
DOCUMENT-IDENTIFIER: US 6005916 A

TITLE: Apparatus and method for imaging with wavefields using inverse scattering techniques

DATE-ISSUED: December 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Johnson; Steven A.	Salt Lake City	UT		
Borup; David T.	Salt Lake City	UT		
Wiskin; James W.	Salt Lake City	UT		
Natterer; Frank	Muenster			DE
Wubeling; F.	Muenster			DE
Zhang; Yongzhi	Madison	WI		
Olsen; Scott Charles	Salt Lake City	UT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Techniscan, Inc.	Salt Lake City	UT			02

APPL-NO: 08/ 972101
DATE FILED: November 17, 1997

PARENT-CASE:
This patent application is a continuation of U.S. patent application Ser. No. 08/706,205 filed on Aug. 29, 1996, which is a continuation-in-part of U.S. patent application Ser. No. 08/486,971 filed on Jun. 22, 1995 now abandoned, which is a continuation-in-part of U.S. patent application Ser. No. 07/961,768 filed on Oct. 14, 1992 now U.S. Pat. No. 5,588,032, all of which are incorporated herein by reference.

INT-CL: [06] G01 N 23/201

US-CL-ISSUED: 378/87; 378/98, 378/99, 600/425, 600/437
US-CL-CURRENT: 378/87; 378/98, 600/425, 600/437

FIELD-OF-SEARCH: 378/8, 378/86, 378/87, 378/90, 378/98, 378/901, 600/410, 600/425, 600/437, 600/476

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4622222	November 1986	Johnson	73/602
4727550	February 1988	Chang et al.	372/2
4798209	January 1989	Klingenbeck et al.	128/653
5227797	July 1993	Murphy	342/22
5588032	December 1996	Johnson et al.	378/8
5667893	September 1997	de Hoop et al.	367/50

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Chew, W.C. and Wang, Y.M., (May, 1990) "A Fast Algorithm for Solution of a Scattering Problem Using a Recursive Aggregate Tau Matrix Method," Microwave and Opt. Tech Let, vol. 3, No. 5, pp. 164-169, May.
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ART-UNIT: 286

PRIMARY-EXAMINER: Bruce; David Vernon

ABSTRACT:

An apparatus and method for rapid real time imaging with wavefield energy using a C.P.U. programmed to process data derived from wavefield energy that has been transmitted and scattered by an object so as to reconstruct a wavefield image of the object. Electronic signals are propagated and are transduced into wavefield energy waves which in turn are propagated toward the object. Detectors detect the wavefield energy waves scattered by the object. The detected wavefield energy waves are then electronically processed and input into a high-speed digital computer which may comprise a C.P.U. and/or a C.P.U. in combination with an array or parallel processor. Data is also prepared and input to the computer representing the incident field and the computer then reconstructs a high-quality image of the object having high spacial resolution and including actual properties of the object. The media in which the object is embedded may be fluid or solid, homogeneous, or layered (such as stratigraphic layering, or ocean velocity layers, or layering of composites in nondestructive imaging applications), or may consist of porous material (either sedimentary deposits or composites in nondestructive testing).

193 Claims, 98 Drawing figures

☐ 14. Document ID: US 3577145 A Relevance Rank: 40

L2: Entry 15 of 15 File: USPT May 4, 1971

US-PAT-NO: 3577145
DOCUMENT-IDENTIFIER: US 3577145 A

TITLE: RADAR SYSTEM SPIN ECHO CORRELATOR

DATE-ISSUED: May 4, 1971

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Worden; Robert A.	Eaton	NY		
Hair; Hugh H.	Liverpool	NY		
Gerst; Carl W.	Skaneateles	NY		
Viglietta; Benadict	Clinton	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE

APPL-NO: 04/ 849719
DATE FILED: August 13, 1969

INT-CL: [] G01s 9/24

US-CL-ISSUED: 343/17.2PC; 235/181, 324/.5R
US-CL-CURRENT: 342/189; 324/300, 342/201, 708/813

FIELD-OF-SEARCH: 343/17.2, 343/17.2 (PC), 235/181, 324/.5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3265961	August 1966	Mims	324/.5

ART-UNIT: 222

PRIMARY-EXAMINER: Tubbesing; T. H.

ABSTRACT:

The spin properties of paramagnetic materials are utilized to provide a correlator of radar signals. Paramagnetic materials having an in homogeneous resonance line and relatively long spin-spin and spin-lattice relaxation times such as phosphorous-doped silicon are placed into a coupling structure which couples RF energy to the magnetic spin system. Such a structure can be a simple tuned LC oscillator for low-frequency operation or a microwave cavity or slow wave structure for microwave operation.

4 Claims, 19 Drawing figures

☐ 15. Document ID: US 6295677 B1 Relevance Rank: 40

L2: Entry 3 of 15 File: USPT Oct 2, 2001

US-PAT-NO: 6295677
DOCUMENT-IDENTIFIER: US 6295677 B1

TITLE: Method for inspecting liquid filled pipes using magnetostrictive sensors

DATE-ISSUED: October 2, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kwun; Hegeon	San Antonio	TX		
Bartels; Keith A.	San Antonio	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Southwest Research Institute	San Antonio	TX			02

APPL-NO: 09/ 469423
DATE FILED: December 23, 1999

INT-CL: [07] G01 N 29/08, G01 N 29/14

US-CL-ISSUED: 7/602; 73/622
US-CL-CURRENT: 73/602; 73/622

FIELD-OF-SEARCH: 73/622, 73/623, 73/587, 73/602, 73/592, 73/594, 73/597, 73/598, 73/599, 73/600

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4428235	January 1984	Sugiyama	73/579
4577503	March 1986	Imaino et al.	73/602
4937767	June 1990	Reuschel et al.	364/570
5144389	September 1992	Lochner	73/609
5404754	April 1995	Wang	73/602
5425272	June 1995	Rhodes et al.	73/579
5458120	October 1995	Lorraine	128/63.01
5537876	July 1996	Davidson et al.	73/624
5549111	August 1996	Wright et al.	128/742
5581037	December 1996	Kwun et al.	73/623
5734588	March 1998	Rose et al.	364/507
5970434	October 1999	Brophy et al.	702/170
6000288	December 1999	Kwun et al.	73/597

ART-UNIT: 286

PRIMARY-EXAMINER: Williams; Hezron

ASSISTANT-EXAMINER: Miller; Rose M.

ABSTRACT:

An improved method for defect detectability for the inspection of liquid filled pipes using magnetostrictive sensors. The improved method comprises first recognizing the liquid-induced changes in the dispersion properties of the second longitudinal wave mode, L(0,2). These liquid-induced changes include a severe dispersion at periodic branching frequencies that result in a pulse-like characteristic in the extended received signal. A trailing portion of a received signal component associated with a geometric irregularity, is shown to comprise the branching frequency components. The trailing portion of the extended signal may therefore be removed in order to improve defect detection. The removal process comprises one of three alternative methods. A first method includes creating a short duration pulse free of the frequency components that comprise the trailing signals, and applying the pulse to a magnetostrictive transmitter, thereby generating a longitudinal wave signal in the pipe wall free of the trailing signal frequency components. A second method comprises transmitting a broadband signal and processing the detected signal through a digital filter that eliminates those frequency components known to comprise the trailing signals. A third method involves using a signal whose bandwidth lies in the region between two adjacent branching frequencies in the dispersion curve. The result is a detected signal within which components representative of irregularities are less extended and therefore less likely to override subsequent defect components in the detected signal.

12 Claims, 8 Drawing figures

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw Desc | Image

Generate Collection | Print

Term	Documents
SIGNAL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	2932974
SIGNALS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1455848
TRANSMITTER.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	262674
TRANSMITTERS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	50377
(1 AND (SIGNAL ADJ TRANSMITTER)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	15
(L1 AND (SIGNAL ADJ TRANSMITTER)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	15

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